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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,020	11/24/2003	Akira Matsuda	032130	9168

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EXAMINER	
DYE, RENA	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
09/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/719,020	MATSUDA ET AL.	
	Examiner	Art Unit	
	Michael La Villa	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2 July 2008 (RCE)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20,22-26 and 32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20,22-26 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20080625*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2 July 2008 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

3. A person shall be entitled to a patent unless –

4. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 20, 22-25, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Atobe JP 59-50190 for the reasons of record in the Office Action mailed on 6 February 2008. With respect to Claim 22, nickel chloride is a salt of hydrochloric acid. With respect to Claim 32, Atobe teaches a layer of one micron thickness which is encompassed by the claimed layer thickness of 1000 nm.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be

> patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

   1. Determining the scope and contents of the prior art.
   2. Ascertaining the differences between the prior art and the claims at issue.
   3. Resolving the level of ordinary skill in the pertinent art.
   4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 20, 22-26, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rice et al. USPN 4,888,574 in view of Kazanovtse, et al. (WPI World Patent Information Derwent, Vol. 29) in further view of Applicant's Admissions. Rice et al. teaches a multilayered printed circuit board material and a method for producing the board material. The circuit board comprises a substrate, an electrical resistance material layer, and a conductive material layer (for example, a conductive layer of copper foil). The resistance material layer comprises a nickel-phosphorus alloy having up to 30 weight percent phosphorus, and the Ni-P alloy layer is produced by an electroplating technique. Rice et al. teaches away from the usage of sulfate salts, although Example 1 (column 3) does describe a nickel plating bath containing nickel sulfate and nickel chloride. Rice et al. teaches plating bath temperatures and plating bath pH values which also lie within applicants' claimed temperature range and claimed pH value range. See Rice (column 1, lines 44 to 61; column 2, lines 17 to 61; and column

3, line 28 to column 5, line 9). Rice et al. does not teach or suggest the usage of nickel plating baths that contain sulphamate ions. Kazanovtse et al. teaches a nickel plating bath composition for the deposition of nickel-phosphorus alloys on a cathode such as copper or stainless steel. The nickel plating bath comprises nickel sulphamate, nickel chloride, orthophosphoric acid, and zinc phosphate. Kazanovtse et al. discloses a method of forming a nickel-phosphorus alloy coating on a conductive substrate by using a sulphamate-orthophosphoric acid plating bath under the following conditions: pH = 1.2 to 1.6; temperature = 70 to 75° C; and current density of 30 A/dm2. See the English-language Abstract in WPI World Patent Information Derwent. While Kazonovtse et al. teaches nickel sulphamate amounts lower than those claimed, Applicant's Admissions teach that the claimed amounts of nickel sulphamate are conventional. See Applicant's Admissions (page 7, lines 3-7 in the Specification). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected conventional amounts of a conventional nickel salt, such as the claimed amounts of nickel sulphamate salt, for use in a nickel plating bath as taught by Rice et al. in view of Kazanovtse et al. in forming the articles of Rice in view of Kazanovtse since such conventional conditions would be expected to be effective. Rice motivates using non-nickel sulfate salts and Kazanovtse et al. motivates nickel sulphamate plating compositions for forming NiP layers. A person skilled in the art of nickel electroplating would have been motivated to rely on Kazanovtse et al. in conjunction with conventional deposition techniques for

deposition using nickel sulphamate of the claimed amounts of nickel sulphamate because a result- effective variable (such as the usage of a sulphamate salt in a nickel plating bath) can be optimized by a skilled person in order to achieve a recognized result (such as a Ni-P alloy plating having improved structural properties or characteristics). See In re Boesch, 205 USPQ 215 (CCPA 1980). Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical.

9. Claims 20, 22-25, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atobe JP 59-50190. Atobe teaches a brass plate coated with NiP having 16.5 % by weight of phosphorus. See Atobe (Working Example 3 on pages 4 and 5 of the translation). With respect to Claim 22, nickel chloride is a salt of hydrochloric acid. With respect to Claim 23, it would be expected that the bath pH would be less than 6 in view of the various highly acidic species present. Atobe teaches a NiP electroplating bath comprising nickel sulphamate, phosphoric acid, and phosphorus acid, wherein the claimed amounts of these ingredients are used. See Atobe (Abstract and corresponding text). Atobe may not exemplify compositions having the claimed relative amounts of nickel sulphamate, phosphoric acid, and phosphorous acid. However, Atobe suggests a range of effective amounts of each that would be encompassed by the claimed amounts. It would have been obvious to one of ordinary skill in the art at the time of the invention to form a coating bath with claimed amounts of nickel

sulphamate, as Atobe suggests that such amounts are effective for electroplating NiP plating layers. It would have been obvious to one of ordinary skill in the art at the time of the invention to form a coating bath with the claimed amounts of phosphoric acid (MW=98) and phosphorus acid (MW=82), as Atobe suggests that such amounts are effective for electroplating NiP plating layers. For example, since Atobe suggests 100 g/l of phosphoric acid as effective and since the molecular weight of phosphoric acid is 98 and the atomic weight of phosphorus is 31, such a solution would comprise about 31 g of phosphorus, meeting the claimed requirement. The claimed pH, bath temperature, and plating current density are also disclosed. Atobe suggests that steel metal substrates may be used (working example 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the coating of Atobe to steel foil, i.e., iron alloy foil, as Atobe suggests that using foil substrates and using iron alloy substrates may be effective.

Response to Amendment

10. Applicant has filed a Declaration by Inventor Matsuda on 2 July 2008, which Declaration has been considered. The Declaration clarifies that flow conditions in certain platings in examples in the Declaration of 5 March 2006 were the same as those used in the examples described in the Specification.

11. Applicant's amendment to the Title is satisfactory for overcoming the objection to the Title in the Office Action mailed on 6 February 2008, and so this objection is withdrawn.

12. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Atobe of the Office Action mailed on 6 February 2008. Applicant argues that the claim amendment to Claim 20, namely, "a foil of copper," precludes a copper alloy foil. The amendment would not appear to narrow the claim scope in the manner argued for. Rather, it would appear to merely reword what had been claimed, and the claim scope would appear to encompass brass alloy foils for the reasons previously provided. Rejection is maintained.

13. In view of applicant's amendments and arguments, applicant traverses the section 103 rejection over Rice in view of Kazonovtse of the Office Action mailed on 6 February 2008. Rejection is withdrawn since Rice in view of Kazonovtse does not teach or suggest the claimed amounts of nickel sulphamate. Rejection over these references in view of Applicant's Admissions suggests this missing feature. Applicant's arguments pertaining to unexpected results are not persuasive since the claimed amounts of nickel sulphamate are rendered obvious by the applied art and since applicant's evidence pertains to copper foils having Rz of 2.1 microns, which would be expected to affect the observed layer resistance values, and since applicant has not demonstrated the argued for results at other Rz values.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is

(571) 272-1539. The examiner can normally be reached on Monday through Friday.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael La Villa/
Michael La Villa
Primary Examiner, Art Unit 1794
31 August 2008